

COMMON BOTTLENOSE DOLPHIN (*Tursiops truncatus truncatus*): Hawaiian Islands Stock Complex- Kauai/Niihau, Oahu, 4-Islands, Hawaii Island, Hawaii Pelagic

STOCK DEFINITION AND GEOGRAPHIC RANGE

Common bottlenose dolphins are widely distributed throughout the world in tropical and warm-temperate waters (Perrin *et al.* 2009). Bottlenose dolphins are common throughout the Hawaiian Islands, from the island of Hawaii to Kure Atoll (Shallenberger 1981, Baird *et al.* 2013). Summer/fall shipboard surveys of the waters within the U.S. Exclusive Economic Zone (EEZ) of the Hawaiian Islands resulted in 18 sightings in 2002, 20 sightings in 2010, and 4 sightings in 2017 (Barlow 2006, Bradford *et al.* 2017, Yano *et al.* 2018; Figure 1). In the Hawaiian Islands, bottlenose dolphins are found in shallow inshore waters and deep water (Baird *et al.* 2009).

Separate offshore and coastal forms of bottlenose dolphins have been identified along continental coasts (Ross and Cockcroft 1990; Van Waerebeek *et al.* 1990), and there is evidence that similar onshore-offshore forms may exist in Hawaiian waters (Baird 2016). In their analysis of sightings of bottlenose dolphins in the eastern tropical Pacific (ETP), Scott and Chivers (1990) noted a large hiatus between the westernmost sightings and the Hawaiian Islands. These data suggest that bottlenose dolphins in Hawaiian waters belong to a separate stock from those in the ETP. Furthermore, recent photo-identification and genetic studies off Oahu, Maui, Lanai, Kauai, Niihau, and Hawaii suggest limited movement of bottlenose dolphins between islands and offshore waters (Baird *et al.* 2009; Martien *et al.* 2012). These data suggest the existence of demographically distinct resident populations at each of the four main Hawaiian Island groups – Kauai & Niihau, Oahu, the ‘4-island’ region (Molokai, Lanai, Maui, Kahoolawe), and Hawaii. Genetic data support inclusion of bottlenose dolphins in deeper waters surrounding the main Hawaiian Islands as part of the broadly distributed pelagic population (Martien *et al.* 2012).

Over 99% of the bottlenose dolphins linked through photo-identification to one of the insular populations around the main Hawaiian Islands (Baird *et al.* 2009) have been documented in waters of 1000 m or less (Martien and Baird 2009). Based on these data, Martien and Baird (2009) suggested that the boundaries between the insular stocks and the Hawaii Pelagic stock be placed along the 1000 m isobath. Since that isobath does not separate Oahu from the 4-Islands Region, the boundary between those stocks runs approximately equidistant between the 500 m isobaths around Oahu and the 4-Islands Region, through the middle of Kaiwi Channel. These boundaries (Figure 2) are applied in this report to recognize

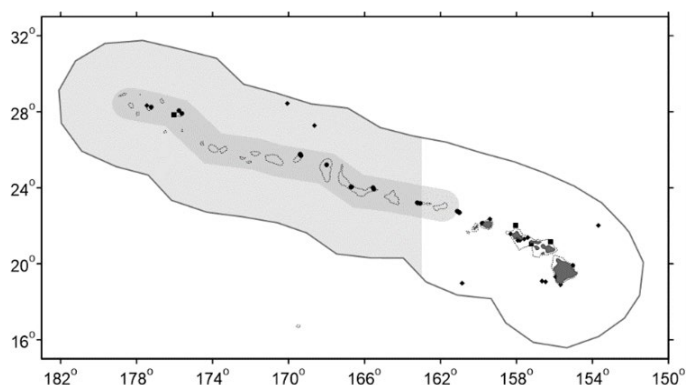


Figure 1. Bottlenose dolphin sighting locations during the 2002 (diamond), 2010 (circle), and 2017 (square) shipboard cetacean surveys of U.S. EEZ waters surrounding the Hawaiian Islands (Barlow 2006, Bradford *et al.* 2017, Yano *et al.* 2018). Dark gray shading indicates of the original Papahānaumokuākea Marine National Monument, with the lighter gray shading denoting the full 2016 Expansion area. Dotted line represents the 1000 m isobaths. Insular stock boundaries are shown in Figure 2.

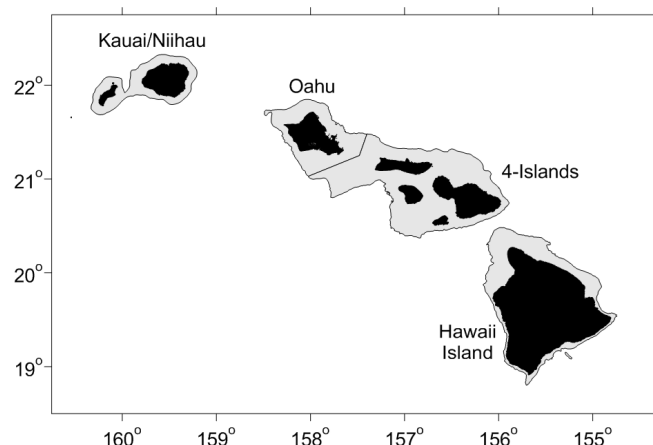


Figure 2. Main Hawaiian Islands insular bottlenose dolphin stock boundaries (gray shading). Areas beyond the 1000 m isobath represent the pelagic stock range.

separate insular and pelagic bottlenose dolphin stocks for management ([NMFS 2005](#)). These boundaries may be revised in the future as additional information becomes available. To date, no data are available regarding population structure of bottlenose dolphins in the Northwestern Hawaiian Islands (NWHI), though sightings during the 2010 survey indicate they are commonly found close to the islands and atolls there (Bradford *et al.* 2017). Given the evidence for island resident populations in the main Hawaiian Islands, the larger distances between islands in the NWHI, and the finding of population structure within the NWHI in other dolphin species (Andrews 2010), it is likely that additional demographically independent populations of bottlenose dolphins exist in the NWHI. However, until data become available upon which to base stock designations in this area, the NWHI will remain part of the Hawaii Pelagic Stock.

For the Marine Mammal Protection Act (MMPA) Pacific stock assessment reports, bottlenose dolphins within the Pacific U.S. EEZ are divided into seven stocks: 1) California, Oregon and Washington offshore stock, 2) California coastal stock, and five Pacific Islands Region management stocks (this report): 3) Kauai/Niihau, 4) Oahu, 5) 4-Islands (Molokai, Lanai, Maui, Kahoolawe), 6) Hawaii Island and 7) the Hawaiian Pelagic Stock, including animals found both within the Hawaiian Islands EEZ and in adjacent high seas waters. Because data on abundance, distribution, and human-caused impacts are largely lacking for high seas waters, the status of the Hawaii pelagic stock is evaluated based on data from U.S. EEZ waters of the Hawaiian Islands ([NMFS 2005](#)). Estimates of abundance, potential biological removals, and status determinations for the five Hawaiian stocks are presented separately below.

HUMAN CAUSED MORTALITY AND SERIOUS INJURY

Fishery Information

Information on fishery-related mortality of cetaceans in Hawaiian waters is limited, but the gear types used in Hawaii fisheries are responsible for marine mammal mortality and serious injury in other fisheries throughout U.S. waters. There are at least two reports of entangled bottlenose dolphins dying in gillnets off Maui (Nitta and Henderson 1993, Maldini 2003, Bradford and Lyman 2013). Although gillnet fisheries are not observed or monitored through any State or Federal program, State regulations now ban gillnetting around Maui and much of Oahu and require gillnet fishermen to monitor their nets for bycatch every 30 minutes in those areas where gillnetting is permitted. In 2018 a bottlenose dolphin calf was observed with a gunshot wound through its melon (Bradford and Lyman 2020). Although the wound was initially judged to be serious, ten sightings of this animal since the injury was initially observed have indicated the wound is healing and the animal has survived (Harnish *et al.* 2019). Based on the most recent observations of the animal the injury is currently considered to be non-serious under the most recently developed criteria for assessing serious injury in marine mammals ([NMFS 2012](#)).

No estimates of human-caused mortality or serious injury are currently available for nearshore hook and line or gillnet fisheries because these fisheries are not observed or monitored for protected species bycatch.

Bottlenose dolphins are one of the species commonly reported to steal bait and catch from several Hawaii sport and commercial fisheries (Nitta and Henderson 1993, Schlais 1984). Observations of bottlenose dolphins stealing bait or catch have been made in the day handline fishery (palu-ahi) for tuna, the night handline fishery for tuna (ika-shibi), the handline fishery for mackerel scad, the troll fishery for billfish and tuna, and the inshore set gillnet fishery (Nitta and Henderson 1993). Nitta and Henderson (1993) indicated that bottlenose dolphins remove bait and catch from handlines used to catch bottomfish off the island of Hawaii and Kaula Rock and formerly on several banks of the Northwestern Hawaiian Islands. Fishermen claim interactions with dolphins that steal bait and catch are increasing,

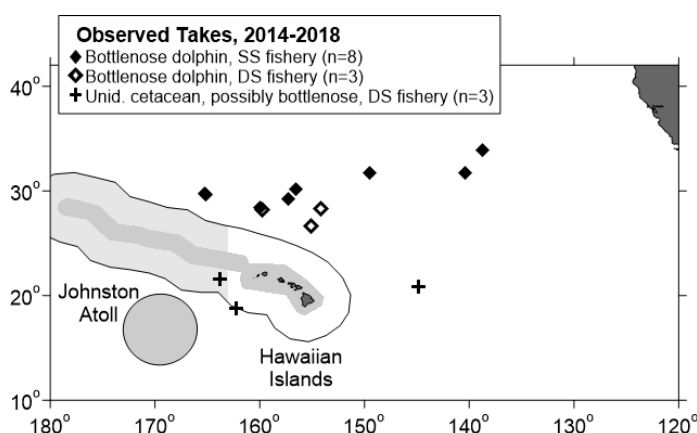


Figure 3. Locations of observed Pelagic Stock bottlenose dolphin takes within the shallow-set fishery (filled diamonds) and deep-set fishery (open diamonds), and unidentified cetaceans considered to possibly or likely be bottlenose dolphins based on the observer's description (crosses) in the Hawaii-based longline fishery, 2014-2018. Solid lines represent the U. S. EEZ. Gray shading notes areas closed to commercial fishing, with the PMNM Expansion area closed since August 2016.

including anecdotal reports of bottlenose dolphins getting “snagged” (Rizzuto 2007). Interaction rates between dolphins and the NWHI bottomfish fishery were estimated based on studies conducted in 1990-1993, indicating that an average of 2.67 dolphin interactions, defined as incidence of dolphins removing bait or catch from hooks, occurred for every 1000 fish brought on board (Kobayashi and Kawamoto 1995). These interactions generally involved bottlenose dolphins and it is not known whether these interactions result in serious injury or mortality of dolphins. This fishery was observed from 2003 through 2005 at 18-25% coverage, during which time, no incidental takes of cetaceans were reported. The bottomfish fishery is no longer permitted for the Northwestern Hawaiian Islands.

Table 1. Summary of available information on incidental mortality and serious injury of bottlenose dolphins (Hawaii Pelagic stock) in commercial longline fisheries, within and outside of the U.S. EEZs (McCracken 2019). Mean annual takes are based on 2014-2018 data unless otherwise indicated. Information on all observed takes (T) and combined mortality events & serious injuries (MSI) is included. Total takes were prorated to deaths, serious injuries, and non-serious injuries based on the observed proportions of each outcome.

Fishery Name	Year	Data Type	Percent Observer Coverage	Observed total interactions (T) and mortality events, and serious injuries (MSI), and total estimated mortality and serious injury (M&SI) of Hawaii Pelagic stock bottlenose dolphins			
				Outside U.S. EEZs		Hawaiian EEZ	
				Obs. T/MSI	Estimated M&SI (CV)	Obs. T/MSI	Estimated M&SI (CV)
Hawaii-based deep-set longline fishery	2014	Observer data	21%	0	0 (-)	0	0 (-)
	2015		21%	0	0 (-)	0	0 (-)
	2016		20%	1/1	5 (0.9)	0	0 (-)
	2017		20%	1/1	7 (0.9)	0	0 (-)
	2018		18%	1/1	3 (0.9)	0	0 (-)
Mean Estimated Annual Take (CV)					3.0 (0.6)	0	0 (-)
Hawaii-based shallow-set longline fishery	2014	Observer data	100%	4/4	4	0	0
	2015		100%	2/2	2	0	0
	2016		100%	1/1	1	0	0
	2017		100%	0	0	0	0
	2018		100%	1/1	1	0	0
Mean Annual Takes (100% coverage)					2		0
Minimum total annual takes within U.S. EEZ							0 (-)

There are currently two distinct longline fisheries based in Hawaii: a deep-set longline (DSL) fishery that targets primarily tunas, and a shallow-set longline (SSL) that targets swordfish. Both fisheries operate within U.S. waters and on the high seas. Between 2014 and 2018, eight bottlenose dolphins were observed hooked or entangled in the SSL fishery (100% observer coverage), and three bottlenose dolphins were observed taken in the DSL fishery (18-22% observer coverage) (Bradford 2018a, 2018b, 2020, Bradford and Forney 2017, McCracken 2019). Based on the locations, these takes are all considered to have been from the Pelagic Stock of bottlenose dolphins. All 11 dolphins were considered to have been seriously injured (Bradford 2018a, 2018b, 2020, Bradford and Forney 2017), based on an evaluation of the observer’s description of the interaction and following the most recently developed criteria for assessing serious injury in marine mammals (NMFS 2012). Average 5-yr estimates of annual mortality and serious injury for the Pelagic Stock during 2014-2018 are 3.0 (CV = 0.6) bottlenose dolphins outside of U.S. EEZs, and 0 within the Hawaiian Islands EEZ (Table 1, McCracken 2019). Two unidentified cetaceans, considered likely bottlenose dolphins based on the observer’s description, were taken in the DSL fishery, and three unidentified cetaceans was taken in the DSL fishery, some of which may have been bottlenose dolphins.

KAUAI/NIIHAU STOCK POPULATION SIZE

A photo-identification study conducted from 2003 to 2005 identified 102 individual bottlenose dolphins around Kauai and Niihau (Baird *et al.* 2009). A Lincoln-Peterson mark-recapture analysis of the photo-identification data resulted in an abundance estimate of 147 (CV=0.11), or 184 animals when corrected for the proportion of marked individuals (Baird *et al.* 2009). The CV of this estimate is likely negatively-biased, as it does not account for variation in the proportion of marked animals within groups. There is no current abundance estimate for this stock.

Minimum Population Estimate

The minimum population estimate for the Kauai/Niihau stock of bottlenose dolphins is the number of distinctive individuals identified during 2012 to 2015 photo-identification studies, or 97 dolphins (Baird *et al.* 2017). The data used in the 2003-2005 mark-recapture estimate (Baird *et al.* 2009) are considered outdated, and therefore are not suitable for deriving a minimum abundance estimate.

Current Population Trend

Only one abundance estimate is available for this stock, such that there is insufficient information to assess population trends.

CURRENT AND MAXIMUM NET PRODUCTIVITY RATES

No data are available on current or maximum net productivity rate for this species in Hawaiian waters.

POTENTIAL BIOLOGICAL REMOVAL

The potential biological removal (PBR) level for this stock is calculated as the minimum population size (97) times one half the default maximum net growth rate for cetaceans ($\frac{1}{2}$ of 4%) times a recovery factor of 0.50 (for a stock of unknown status with no reported fishery mortality or serious injury within the Kauai/Niihau stock range; Wade and Angliss 1997), resulting in a PBR of 1.0 bottlenose dolphins per year.

STATUS OF STOCK

The Kauai/Niihau Stock of bottlenose dolphins is not considered strategic under the 1994 amendments to the MMPA. The status of bottlenose dolphins in the Kauai/Niihau stock relative to OSP is unknown, and there are insufficient data to evaluate abundance trends. Bottlenose dolphins are not listed as “threatened” or “endangered” under the Endangered Species Act (1973), nor designated as “depleted” under the MMPA. There have been no reports of recent mortality or serious injuries; however, there is no systematic monitoring for interactions with protected species within near-shore fisheries that may take this species, thus mean annual takes are undetermined. Insufficient information is available to determine whether the total fishery mortality and serious injury for bottlenose dolphins is insignificant and approaching zero mortality and serious injury rate. One stranded bottlenose dolphin from the Kauai/Niihau stock tested positive for *Morbillivirus* (Jacob *et al.* 2016). The presence of *morbillivirus* in 10 species of cetacean in Hawaiian waters (Jacob *et al.* 2016), raises concerns about the history and prevalence of this disease in Hawaii and the potential population impacts, including the cumulative impacts of disease with other stressors.

OAHU STOCK POPULATION SIZE

A photo-identification study conducted in 2002, 2003 and 2006 identified 67 individual bottlenose dolphins around Oahu (Baird *et al.* 2009). A Lincoln-Peterson mark-recapture analysis of the photo-identification data resulted in an abundance estimate of 594 (CV=0.54), or 743 animals when corrected for the proportion of marked individuals (Baird *et al.* 2009). The estimate does not include individuals from the Northeastern (windward) side of the island. There is no current abundance estimate for this stock.

Minimum Population Estimate

There is no current minimum population estimate for the Oahu stock of bottlenose dolphins. The data used in the 2002-2006 mark-recapture estimate (Baird *et al.* 2009) are considered outdated, and therefore are not suitable for deriving a minimum abundance estimate, and the number of distinctive individuals identified during 2009 to 2012 photo-identification studies (Baird *et al.* 2017) is derived from insufficient survey effort to be considered a reasonable estimate of minimum population size.

Current Population Trend

Only one abundance estimate is available for this stock, such that there is insufficient information to assess population trends.

CURRENT AND MAXIMUM NET PRODUCTIVITY RATES

No data are available on current or maximum net productivity rate for this species in Hawaiian waters.

POTENTIAL BIOLOGICAL REMOVAL

The potential biological removal (PBR) level for this stock is calculated as the minimum population size times one half the default maximum net growth rate for cetaceans ($\frac{1}{2}$ of 4%) times a recovery factor of 0.50 (for a stock of unknown status with no reported fishery mortality in the stock range (Wade and Angliss 1997)). Because there is no minimum population size estimate for this stock, the PBR is undetermined.

STATUS OF STOCK

The Oahu stock of bottlenose dolphins is not considered strategic under the 1994 amendments to the MMPA. The status of bottlenose dolphins in Oahu waters relative to OSP is unknown, and there are insufficient data to evaluate abundance trends. Bottlenose dolphins are not listed as “threatened” or “endangered” under the Endangered Species Act (1973), nor designated as “depleted” under the MMPA. There have been no reports of recent mortality or serious injuries; however, there is no systematic monitoring for interactions with protected species within near-shore fisheries that may take this species, thus mean annual takes are undetermined. Insufficient information is available to determine whether the total fishery mortality and serious injury for bottlenose dolphins is insignificant and approaching zero mortality and serious injury rate. *Morbilivirus* has been detected within other insular stocks of bottlenose dolphins in Hawaii (Jacob *et al.* 2016). The presence of *morbilivirus* in 10 species of cetacean in Hawaiian waters raises concerns about the history and prevalence of this disease in Hawaii and the potential population impacts, including the cumulative impacts of disease with other stressors.

4-ISLANDS STOCK POPULATION SIZE

A photo-identification study conducted from 2000-2006 identified 98 individual bottlenose dolphins around Maui and Lanai (Baird *et al.* 2009). A Lincoln-Peterson mark-recapture analysis of the photo-identification data resulted in an abundance estimate of 153 (CV=0.24), or 191 animals when corrected for the proportion of marked individuals (Baird *et al.* 2009). This abundance estimate likely underestimates the total number of bottlenose dolphins in the 4-islands region because it does not include individuals from the Northeastern (windward) sides of Maui and Molokai. The CV of this estimate is likely negatively-biased, as it does not account for variation in the proportion of marked animals within groups. There is no current abundance estimate for this stock.

Minimum Population Estimate

There is no current minimum population estimate for the 4-Islands stock of bottlenose dolphins. The data used in the 2000-2006 mark-recapture estimate (Baird *et al.* 2009) are considered outdated, and therefore are not suitable for deriving a minimum abundance estimate, and the number of distinctive individuals identified during 2009 to 2012 photo-identification studies (Baird *et al.* 2017) is derived from insufficient survey effort to be considered a reasonable estimate of minimum population size.

Current Population Trend

Only one abundance estimate is available for this stock, such that there is insufficient information to assess population trends.

CURRENT AND MAXIMUM NET PRODUCTIVITY RATES

No data are available on current or maximum net productivity rate for this species in Hawaiian waters.

POTENTIAL BIOLOGICAL REMOVAL

The potential biological removal (PBR) level for this stock is calculated as the minimum population size times one half the default maximum net growth rate for cetaceans ($\frac{1}{2}$ of 4%) times a recovery factor of 0.50 (for a stock of unknown status with no reported fishery mortality in the 4-Islands stock area (Wade and Angliss 1997)). Because there is no minimum population size estimate for this stock, the PBR is undetermined.

STATUS OF STOCK

The 4-Islands Region Stock of bottlenose dolphins is not considered strategic under the 1994 amendments to the MMPA. The status of bottlenose dolphins in 4-Islands waters relative to OSP is unknown, and there are insufficient data to evaluate trends in abundance. Bottlenose dolphins are not listed as “threatened” or “endangered” under the Endangered Species Act (1973), nor as “depleted” under the MMPA. There have been no reports of recent mortality or serious injuries of this stock; however, there is no systematic monitoring for interactions with protected species within near-shore fisheries that may take this species, thus mean annual takes are undetermined. Insufficient

information is available to determine whether the total fishery mortality and serious injury for bottlenose dolphins is insignificant and approaching zero mortality and serious injury rate. *Morbilivirus* has been detected within other insular stocks of bottlenose dolphins in Hawaii (Jacob *et al.* 2016). The presence of *morbilivirus* in 10 species of cetacean in Hawaiian waters raises concerns about the history and prevalence of this disease in Hawaii and the potential population impacts, including the cumulative impacts of disease with other stressors.

HAWAII ISLAND STOCK POPULATION SIZE

A photo-identification study conducted from 2000-2006 identified 69 individual bottlenose dolphins around the island of Hawaii (Baird *et al.* 2009). A Lincoln-Peterson mark-recapture analysis of the photo-identification data resulted in an abundance estimate of 102 (CV=0.13), or 128 animals when corrected for the proportion of marked individuals (Baird *et al.* 2009). This abundance estimate likely underestimates the total number of bottlenose dolphins around the island of Hawaii because it does not include individuals from the Northeastern (windward) side of the island. The CV of this estimate is likely negatively-biased, as it does not account for variation in the proportion of marked animals within groups. There is no current abundance estimate for this stock.

Minimum Population Estimate

The minimum population estimate for the Hawaii Island bottlenose dolphins is the number of distinctive individuals identified during 2010 to 2013 photo-identification studies, or 91 dolphins (Baird *et al.* 2017). The data used in the 2000-2006 mark-recapture estimates (Baird *et al.* 2009) are considered outdated, and therefore are not suitable for deriving a minimum abundance estimate.

Current Population Trend

Only one abundance estimate is available for this stock, such that there is insufficient information to assess population trends.

CURRENT AND MAXIMUM NET PRODUCTIVITY RATES

No data are available on current or maximum net productivity rate for this species in Hawaiian waters.

POTENTIAL BIOLOGICAL REMOVAL

The potential biological removal (PBR) level for this stock is calculated as the minimum population size (91) times one half the default maximum net growth rate for cetaceans ($\frac{1}{2}$ of 4%) times a recovery factor of 0.50 (for a stock of unknown status with no reported fishery mortality in the Hawaii Islands stock area (Wade and Angliss 1997), resulting in a PBR of 0.9 bottlenose dolphins per year.

STATUS OF STOCK

The Hawaii Island Stock of bottlenose dolphins is not considered strategic under the 1994 amendments to the MMPA. The status of bottlenose dolphins in waters around Hawaii Island relative to OSP is unknown, and there are insufficient data to evaluate trends in abundance. Hawaii Island bottlenose dolphins are regularly seen near aquaculture pens off the Kona coast, and aquaculture workers have been observed feeding bottlenose dolphins. Bottlenose dolphins in this region are also known to interact with divers. Bottlenose dolphins are not listed as “threatened” or “endangered” under the Endangered Species Act (1973), nor designated as “depleted” under the MMPA. In the past 5 years, one animal was partially disentangled by a diver, but with hook and line remaining in its mouth was considered a serious injury. There is no systematic monitoring of takes in near-shore fisheries that may take this species, the single observed serious injury may be an underestimate of the total fishery mortality for this stock. Total fishery mortality and serious injury for Hawaii Island bottlenose dolphins is not approaching zero mortality and serious injury rate. *Morbilivirus* has been detected within other insular stocks of bottlenose dolphins in Hawaii (Jacob *et al.* 2016). The presence of *morbilivirus* in 10 species of cetacean in Hawaiian waters raises concerns about the history and prevalence of this disease in Hawaii and the potential population impacts, including the cumulative impacts of disease with other stressors.

HAWAII PELAGIC STOCK POPULATION SIZE

Encounter data from shipboard line-transect surveys of the entire Hawaiian Islands EEZ were recently reevaluated for each survey year, resulting in the updated abundance estimates of bottlenose dolphins in the Hawaii EEZ (Bradford *et al.* 2021; Table 1).

Table 1. Line-transect abundance estimates for bottlenose dolphins derived from surveys of the entire Hawaii EEZ in 2002, 2010, and 2017 (Bradford *et al.* 2021).

Year	Abundance	CV	95% Confidence Limits
2017	NA		
2010	25,188	0.58	8,791-72,168
2002	9,678	0.49	3,924-23,868

The updated design-based abundance estimates use sighting data from throughout the central Pacific to estimate the detection function and use Beaufort sea-state-specific trackline detection probabilities for bottlenose dolphins from Barlow *et al.* (2015). Although previous estimates from the Hawaii EEZ have been published using subsets of this data, Bradford *et al.* (2021) uses a consistent approach for estimating all abundance parameters and as such are considered the best available estimates for each survey year. There were no sightings of bottlenose dolphins during systematic survey effort in 2017 and therefore design-based estimates are not available for that survey year. Model-based abundance estimates are available for all survey years (Becker *et al.* 2021), but are derived from sightings representing all bottlenose dolphins stocks within the Hawaiian islands, as removal of sightings of island-associated stock individuals would leave insufficient sample size to derive a robust model. Model covariates may not accurately reflect the habitat associations of pelagic bottlenose dolphins given the large number of insular sightings used in model development. Because the model is not stock-specific and pelagic stock abundance cannot be reliably extracted from model outputs, the design-based estimates are considered the best available for the pelagic stock.

Minimum Population Estimate

There is no current minimum population estimate for the Hawaii pelagic stock of bottlenose dolphins. The 2010 estimate is considered outdated, and therefore are not suitable for deriving a minimum abundance estimate.

Current Population Trend

The available abundance estimates for this stock have very broad and overlapping confidence intervals, precluding robust evaluation of population trend for this stock.

CURRENT AND MAXIMUM NET PRODUCTIVITY RATES

No data are available on current or maximum net productivity rate for this species in Hawaiian waters.

POTENTIAL BIOLOGICAL REMOVAL

The potential biological removal (PBR) level for this stock is calculated as the minimum population size within the U.S EEZ of the Hawaiian Islands times one half the default maximum net growth rate for cetaceans ($\frac{1}{2}$ of 4%) times a recovery factor of 0.5 (for a stock of unknown status with a Hawaiian Islands EEZ fishery mortality and serious injury rate CV of 0; Wade and Angliss 1997). Because there is no minimum population size estimate for this stock, the PBR is undetermined.

STATUS OF STOCK

The Hawaii Pelagic Stock of bottlenose dolphins is not considered strategic under the 1994 amendments to the MMPA. The status of bottlenose dolphins in Hawaiian waters relative to OSP is unknown, and there are insufficient data to evaluate trends in abundance. It is not listed as “threatened” or “endangered” under the Endangered Species Act (1973), nor designated as “depleted” under the MMPA. Although the PBR for this stock is undetermined, the estimated rate of fisheries related mortality or serious injury within the Hawaiian Islands EEZ is zero. The total fishery mortality and serious injury for Hawaii pelagic bottlenose dolphins is insignificant and approaching zero mortality and serious injury rate. *Morbilivirus* has been detected within other insular stocks of bottlenose dolphins in Hawaii (Jacob *et al.* 2016). The presence of *morbilivirus* in 10 species of cetacean in Hawaiian waters raises concerns about the history and prevalence of this disease in Hawaii and the potential population impacts, including the cumulative impacts of disease with other stressors.

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